| Age | Primary | Adjuvant RT region | No of positive nodes | ECE | Site of recurrence | Time to recurrence post RT | Mortality post recurrence |
|---|---|---|---|---|---|---|---|
| 64 | Neck | Neck | 6/61 | No | - | - | - |
| 57 | Unknown | Neck | 1/29 | Yes | - | - | - |
| 81 | Cheek | Neck | 2/31 | Yes | Distant | 4 months | RIP at 4 months |
| 43 | Leg | Groin | 9/25 | No | - | - | - |
| 41 | Back | Axilla | 3/16 | No | - | - | - |
| 19 | Neck | Neck | 1/35 | Yes | Distant | 1 month | Alive at 25months |
| 79 | Eyelid | Neck | 1/58 | Yes | Local + Distant | 3.5 months | Alive at 22months |
| 69 | Auricular | Neck | 4/50 | Yes | - | - | - |
| 68 | Unknown | Neck | 1/64 | Yes | - | - | - |
| 65 | Cheek | Neck | 1/24 | No | - | - | - |
| 75 | Unknown | Neck | 4/45 | Yes | Distant | 4 months | RIP at 1 month |
| 73 | Neck | Neck | 0 | No | - | - | - |
| 62 | Leg | Groin | 5/10 | No | - | - | - |
| 70 | Leg | Groin | 13/33 | No | - | - | - |
| 57 | Foot | Groin | 3/8 | Yes | Local + Distant | 0 months + 2.8 months | RIP at 10months |
| 80 | Cheek | Neck | 38/42 | Yes | Distant | 1 month | RIP at 7months |
| 48 | Unknown | Axilla | 13/33 | Yes | - | - | - |
| 57 | Hand | Axilla | 13/33 | Yes | Distant | 2 months | Alive at 8months |
| 63 | Leg | Groin | 2/25 | Yes | - | - | - |
| 37 | Leg | Groin | 1/9 | Yes | - | - | - |

**Conclusion:** Radiotherapy was well tolerated and effective as no patient developed lymph node field relapse. However patients are at risk of early local and distant relapse, especially those with extranodal extension. Consideration should be given to the use of routine PET CT for high risk patients.

## Electronic Poster: Clinical track: Sarcoma

### EP-1398

### Acute gastro-intestinal toxicities after pre-operative tomotherapy for retroperitoneal liposarcoma

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**Purpose or Objective:** Surgery is the cornerstone in the management of sarcomas. The aim of this study was to evaluate intensity-modulated radiotherapy (RT) with tomotherapy followed by surgery in terms of acute gastro-intestinal (GI) toxicities, especially regarding the high-level of prescribed dose (54 Gy/30 fractions/6weeks).

**Material and Methods:** From April 2009 to September 2013, 48 patients were included in a prospective multicenter study. Feasibility of tomotherapy, acute toxicities and local control at 3 years were the principal and secondary objectives. Inclusion criteria were operable, biopsy-proven, retroperitoneal liposarcoma. Patients with non-operable tumors validated after multi-disciplinary team evaluation, other histology or metastatic disease were excluded.Clinical Target Volume (CTV) and mains organs at risk (contralateral kidney, duodenum, bowel bag) were systematically delineated with the surgeon. Dose constraints to the bowel bag were defined as V45 Gy<33% and V30 Gy<50%. Surgery was planned 4 to 8 weeks after RT. Clinical visits were performed weekly during RT, before surgery, and 2 and 6 months after surgery. Toxicity was recorded according to CTCAE V4.0 scale.

**Results:** For acute GI toxicity, 46/48 patients were evaluable. All patients completed the radio surgical schedule without dose reduction. Mean age was 62 years (36-82). All patients were OMS≤2 except one (OMS=3). Mean CTV was 2954 cc (920-4989. Mean small bowel and duodenal volumes were 2725 (1355-4090) and 73 cc (33-113), respectively. Monobloc exerese was systematically achieved and all patients underwent homolateral nephrectomy. Twenty-nine patients underwent bowel resection, including large bowel (28/29), small bowel(4/29) and duodenum (1/29). Mean weight loss during RT was 5,4 kg (about 8% of mean body weight) and 8,9 kg at the first visit after surgery. At 2 months, grade 3 toxicities included duodenal stenosis (1/46), intestinal fistula (1/46) and enterocolitis (1/46) and grade 4 toxicity included GI fistula (1/46). At 6 months, no GI toxicities were observed. Three patients died within 6 months after surgery, 2 of which were related to treatment: one respiratory disorder 6 days after surgery and 1 duodenal perforation with necrosis and infection 4 months after surgery.

**Conclusion:** For patients with retroperitoneal liposarcoma, preoperative 54 Gy RT appears feasible. Due to the low rate of severe complications, no statistic correlations with dose in digestive structure were performed.

### EP-1399

### Safety of concurrent adjuvant radiotherapy and chemotherapy for locally advanced soft tissue sarcoma

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**Purpose or Objective:** The standard treatment of high grade soft tissue sarcoma (STS) is surgery followed by adjuvant radiotherapy (RT); chemotherapy (CT) can be an option in selected patients due to reported benefit in terms of disease free survival. The association of RT with CT might increase tissue reactions with the consequent risk of unplanned treatment interruptions resulting in an increased risk of treatment failure. This retrospective study analyze the safety and feasibility, respectively in terms of additional toxicity and compliance, of concurrent chemoradiotherapy (CTRT) in adjuvant treatment of STS.

**Material and Methods:** Data of 84 STS patients treated with surgery and adjuvant RT from June 1994 to November 2014 at the University of Florence, were retrospectively collected. Anthracycline-based CT was performed in high risk patients. Acute and late local toxicity of RT treatment were assessed respectively by Common Terminology Criteria for Adverse Events (CTCAE) 4.0 and RTOG/EORTC criteria for the Late Radiation Toxicity. CT-related hematological Toxicity was assessed by CTCAE 4.0.

**Results:** Twenty-four (28.6%) patients received CTRT. Mean follow-up was 5.6 years (range 0.4-18.8). At the time of our analysis 8 (9,5%) patients had a local relapse, 17 (19.8%) developed distant metastases, and 14 (16.7%) died of metastatic disease. Local Recurrence Free Survival (LRFS), Distant Relapse Free Survival (DRFS) and Overall Survival (OS) were respectively 83.4%, 70% and 69.5%. Grade ≥3 leucopenia occurred in 6 CTRT patients, resulting in early interruption of the CT treatment in 3 cases. Skin acute toxicity was developed in 59 (70,2%) of patients ; G3 skin toxicity occurred in 19 (22.6%) cases and determined treatment interruption in 15 (17.9%) patients with a mean treatment

delay of 10 days (range 4-20 days). No wounds complication occurred. Grade 1-2 fibrosis, joint stiffness and limb edema occurred in respectively 27 (32.1%), 9 (10.7%) and 18 (21.4%) patients. Age > 60 years was the only predictor of LR at multivariate analysis (HR: 5.26; 95% CI: 1.11-25.05; p=0.037) and correlated with impaired DRFS (86.1% vs 39.9%; p=0.006). No statistical significant parameters influencing OS. No correlation was found between CTRT and acute local toxicity (p= 0.75), and in any case the association determined a definitive interruption of the treatment. There was no difference in acute (p=0.25) and late toxicity (p=0.78) incidence in the IMRT and 3DCRT group.

**Conclusion:** Concurrent CTRT is a well tolerated treatment option with no additional toxicity compared to exclusive RT or sequential CTRT, resulting in adequate compliance to treatment. Combined postoperative CTRT could reduce the gap between surgery and RT in high risk patients eligible for CT. Further studies are needed to assess the optimal timing and sequence of adjuvant therapies.

**EP-1400**

**Combined modality management of myxofibrosarcomas: a single-institution experience**

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**Purpose or Objective:** Myxofibrosarcomas are a historically heterogeneous group of tumors that exhibit a propensity for local recurrence. The objectives of this study were to analyze the prognostic factors and outcomes of patients with MFS treated.

**Material and Methods:** We retrospectively reviewed the records of 41 patients with pathologically confirmed MFS, who underwent surgery and radiotherapy from November 1995 to June 2014. Clinicopathologic features, treatments, and patient outcomes were reviewed.

**Results:** Fourty one patients were identified, of whom 19 were men (46 %) and 22 were female (54%). The median age was 66 years (35-89). Mean follow-up was 3.9 years (0.3-13.9). Stage I and II disease was present respectively in 21 (51.2%) and 20 (48.8%) patients. Most patients (73%) had a high histological grade disease. Primary tumor was located at the extremities in 36 cases (88%) and at the trunk in 5 (12%); 21/41 (51%) were superficial lesions. Surgery was performed in our center on 33 (80%) patients while 8 (20%) patients underwent reoperation after prior surgery in an non-referring center; 31 (75%) had a radical surgery while 10 (25%) had a marginal resection. Four patients received Anthracycline-based adjuvant chemotherapy.
Radiotherapy was delivered to all 41 patients, as pre-operative treatment in 3 cases (7%, median dose: 50Gy) and as adjuvant treatment in 38 patients (93%, median dose 60Gy). Twenty-two patients underwent radiotherapy within 90 days since surgery. At a median follow-up of 3.9 years, there were 8 (20%) local recurrence (LR), 11 (27%) distant metastatic (DM) relapse and 10 (25%) deaths. A significant difference on Local recurrence - Free survival (DFS-LR) emerged in favour of post-operative radiotherapy compared to neoadjuvant radiotherapy (0% vs 72.8%, p=0.0001). Multivariate analysis confirmed pre-operative radiotherapy as a major predictor of LR (HR=18.6; 95% CI 3.7-93.7; p=0.0001). Tumor site was correlated with distant metastasis free-survival (DFS-DM), showing higher incidence of metastatic recurrence for deep lesion compared to superficial lesion (72.1% vs 32.4 % p=0.034), as confirmed by Cox univariate analysis (HR 3.8; 95% IC 1.01-14.36; p=0.049). LR occurrence was the only predictor of impaired overall survival, as confirmed by Cox regression univariate analysis (HR 4.44; 95% CI 1.28-15.45; p=0.019).

**Conclusion:** In our series adjuvant radiotherapy yielded superior local control compared to neoadjuvant irradiation. Deep localization was correlated with an increased risk to develop distant metastasis; local recurrence was a major predictor of OS. Improvement in local treatment is required to increase local control of disease in order to prevent both recurrence and metastatic dissemination.

**EP-1401**

**Surgery, IOERT and EBRT in recurrent extremity sarcomas: long term results**

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**Purpose or Objective:** To report our long-term results with surgery, IOERT and EBRT in recurrent soft-tissue sarcomas of the extremities.

**Material and Methods:** We performed a retrospective analysis of 41 patients suffering from recurrent soft-tissue sarcoma of the extremities, who received IOERT, surgery and EBRT at our institution after prior resection without additional radiation. 11 patients (27%) had more than one prior resection. Median age was 60 years (28-89) and 49% were male. Median tumor size at recurrence was 5 cm and 69% of the tumors were located in the lower limb. Stage in recurrent situation (UICC 7th) was as follows: Ia:2%, Ib:7%, IIa:39%, IIb:10%, III:32%, IV:10%. The majority of patients showed high grade lesions (FNCLCC G1:10%, G2:20%, G3:71%), predominantly liposarcomas (32%) and MFH (29%). Gross total resection was achieved in all patients with free margins in 51% and microscopically positive margins in 49%. IOERT was applied to the tumor bed with a median dose of 15 Gy, using electron energies of 6-8 MeV and a median cone size of 8 cm. IOERT was preceeded (10%) or followed (90%) by EBRT with a median dose of 45 Gy. 20% of the patients also received pre- and/or postoperative chemotherapy.

**Results:** The median follow up was 73 months (9-231) for the entire cohort and 93 months (16-231) in survivors. 9 patients (22%) showed local failures, resulting in estimated 5-year and 10-year local control rates of were 74% and 68%, respectively. 15 patients (37%) showed distant failures, transferring into estimated 5-year and 10-year distant control rates of 62% and 55%, respectively. Overall treatment failure was observed in 23 patients (56%), of whom 7 failed locally only, 15 distant only and 1 combined, resulting in 5- and 10-year estimated FFTF rates of 44% and 32%, respectively.15 patients have deceased, transferring into estimated 5-and 10-year overall survival rates of 74% and 60%, respectively. Severe postoperative complications were observed in 14% of the patients, mainly as wound complications. Severe late toxicity was found in 19% of the patients. Preserved limb function without impairment in activities of daily living was achieved in 81% of the patients.

**Conclusion:** Combination of surgery, IOERT and EBRT resulted in good local control and overall survival in recurrent soft tissue sarcomas of the extremities, although the results are worse than reported for primary situation. Given the high